SEQUENCE LISTING

<110> Serum Biomedical Institute

<120> METHOD OF PRODUCING RECOMBINANT DNA MOLECULES

<130> 04gi30e

<150> US 60/480581
<151> 2003-06-20

<150> US 60/493586
<151> 2003-08-07

<160> 31

<170> PatentIn version 3.1

<210> 1
<211> 1909
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> (1)..(1909)
<223> CDNA sequence for human b-FSH

<400> 1
acagctcttg ccaggcaagg cagccgacca cagaccagga tgaagacact ccagtttttc 60
ttccttttct gttgctggaa agcaatctgc tgcaatagct gtgagctgac caacatcacc 120
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ttcaaaaagt ctgtgtgtgt gcaatgtgcc caggggacaa accactggat caggggattc 540
agactctact gatccctggt ctactggcag agggaactct gggaattgag agtgctgggg 600
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aatggcttct ttagatcaga aaggtcaagg gtagaaaata ctggaagagg atgtttgagg 960
taagctgatg aggctgcccg cagcacacca gtcccatgaa agttagtggc atcagtttca 1020
cctcgccttt tctccagcac atgagtattg agacatgatg tgtctttctg aattgtttgg 1080
tacagatggg gagtaacaga gctcgaagat ttccaagcta ttactaccaa gcctgttagt 1140

taagggcaaa ggcaagaaat tgtaatttgg ggctgtggaa attagcctgc ctctattcat 1200

tacttaaaca aattgatcac atgctactag gctcctgcaa actccttttt gagataaagg 1260

gaaaaaacca aactatctca ccctaccctc cctaggatcc acttctttgg aatgacaaag 1320

gatttgaaag taggtttgaa agcagtttca gcaatttaat aaatataatt aatttgtcta 1380

ccaaatatat ttgtataaat aatagctcct ttagaaagaa ttagccatgg ggggatcgag 1440

gggaaactgc tgttttctag gatcctgtct acatcaatct tctattttat ccatccatgt 1500

tctcccaaat ctgtgctttc tttcaacagg ttatatatta aaactatttc atgagttgat 1560

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ctaatttatt taaagtctta ttttttaat aaagatgcta gccaccagag tcacggcttg 1680

gattgtttta tgtacaaaca gatgacttag aaattctgta ttttataata atattagtgg 1740

aatgaaatct taaaatataa ttcccagtgt ttctataaat attacctttc cttatctttg 1800

gagatattaa aaataatttt gttggatttc tgaagtgttt tgtcacttaa atttcctgtc 1860

atttttgaa gacattttct gatgtaattt gggagaaaaa aagcataga 1909

<210> 2
<211> 54
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> (1)..(5)
<223> ß-FSH signal sequence

<400> 2
atgaagacac tccagttttt cttccttttc tgttgctgga aagcaatctg ctgc 54

<210> 3
<211> 159
<212> DNA
<213> Homo sapiens

<220>
<221> exon
<222> (1)..(159)
<223> exon #1 of human ß-FSH (NM_000510)

<400> 3
atg aag aca ctc cag ttt ttc ttc ctt ttc tgt tgc tgg aaa gca atc 48
Met Lys Thr Leu Gln Phe Phe Phe Leu Phe Cys Cys Trp Lys Ala Ile
1 5 10 15

tgc tgc aat agc tgt gag ctg acc aac atc acc att gca ata gag aaa 96
Cys Cys Asn Ser Cys Glu Leu Thr Asn Ile Thr Ile Ala Ile Glu Lys
20 25 30

gaa gaa tgt cgt ttc tgc ata agc atc aac acc act tgg tgt gct ggc 144
Glu Glu Cys Arg Phe Cys Ile Ser Ile Asn Thr Thr Trp Cys Ala Gly
35 40 45

tac tgc tac acc agg 159
Tyr Cys Tyr Thr Arg
50

<210> 4
<211> 231
<212> DNA
<213> Homo sapiens

<220>
<221> exon
<222> (1)..(231)
<223> exon #2 of human ß-FSH (NM_000510)

<400> 4
gat ctg gtg tat aag gac cca gcc agg ccc aaa atc cag aaa aca tgt 48
Asp Leu Val Tyr Lys Asp Pro Ala Arg Pro Lys Ile Gln Lys Thr Cys
1 5 10 15

acc ttc aag gaa ctg gta tat gaa aca gtg aga gtg ccc ggc tgt gct 96
Thr Phe Lys Glu Leu Val Tyr Glu Thr Val Arg Val Pro Gly Cys Ala
20 25 30

cac cat gca gat tcc ttg tat aca tac cca gtg gcc acc cag tgt cac 144
His His Ala Asp Ser Leu Tyr Thr Tyr Pro Val Ala Thr Gln Cys His
35 40 45

tgt ggc aag tgt gac agc gac agc act gat tgt act gtg cga ggc ctg 192
Cys Gly Lys Cys Asp Ser Asp Ser Thr Asp Cys Thr Val Arg Gly Leu
50 55 60

ggg ccc agc tac tgc tcc ttt ggt gaa atg aaa gaa taa 231
Gly Pro Ser Tyr Cys Ser Phe Gly Glu Met Lys Glu
65 70 75

<210> 5
<211> 129
<212> PRT
<213> Homo sapiens

<400> 5
Met Lys Thr Leu Gln Phe Phe Phe Leu Phe Cys Cys Trp Lys Ala Ile
1 5 10 15

Cys Cys Asn Ser Cys Glu Leu Thr Asn Ile Thr Ile Ala Ile Glu Lys
20 25 30

Glu Glu Cys Arg Phe Cys Ile Ser Ile Asn Thr Thr Trp Cys Ala Gly
35 40 45

Tyr Cys Tyr Thr Arg Asp Leu Val Tyr Lys Asp Pro Ala Arg Pro Lys
50 55 60

Ile Gln Lys Thr Cys Thr Phe Lys Glu Leu Val Tyr Glu Thr Val Arg
65 70 75 80

Val Pro Gly Cys Ala His His Ala Asp Ser Leu Tyr Thr Tyr Pro Val
85 90 95

Ala Thr Gln Cys His Cys Gly Lys Cys Asp Ser Asp Ser Thr Asp Cys
100 105 110

Thr Val Arg Gly Leu Gly Pro Ser Tyr Cys Ser Phe Gly Glu Met Lys
115 120 125

Glu

<210> 6
<211> 390
<212> DNA

<213> Artificial Sequence

<220>
<223> ß-FSH X1X2 PCR product

<300>
<308> GenBank / NM_000510
<309> 2002-11-05
<313> (1)..(390)

<400> 6
atgaagacac tccagttttt cttccttttc tgttgctgga aagcaatctg ctgcaatagc 60

tgtgagctga ccaacatcac cattgcaata gagaaagaag aatgtcgttt ctgcataagc 120

atcaacacca cttggtgtgc tggctactgc tacaccaggg atctggtgta taaggaccca 180

gccaggccca aaatccagaa aacatgtacc ttcaaggaac tggtatatga aacagtgaga 240

gtgcccggct gtgctcacca tgcagattcc ttgtatacat acccagtggc cacccagtgt 300

cactgtggca agtgtgacag cgacagcact gattgtactg tgcgaggcct ggggcccagc 360

tactgctcct ttggtgaaat gaaagaataa 390

<210> 7
<211> 25
<212> DNA
<213> Artificial Sequence

<220>
<223> primer PFX1 n.t. position 40-64 in SEQ ID NO: 1, cDNA sequence for human ß-FSH

<400> 7
atgaagacac tccagttttt cttcc 25

<210> 8
<211> 21
<212> DNA
<213> Artificial Sequence

<220>
<223> primer PRX1 n.t. position 198-178 in SEQ ID NO: 1, cDNA sequence for human ß-FSH

<400> 8
cctggtgtag cagtagccag c 21

<210> 9
<211> 21
<212> DNA
<213> Artificial Sequence

<220>
<223> primer PFX2 n.t. position 199-219 in SEQ ID NO: 1, cDNA sequence for human ß-FSH

<400> 9
gatctggtgt ataaggaccc a 21

<210> 10
<211> 23
<212> DNA

<213> Artificial Sequence

<220>
<223> primer PRX2 n.t. position 429-407 in SEQ ID NO: 1, cDNA sequence for human ß-FSH

<400> 10
ttattctttc atttcaccaa agg 23

<210> 11
<211> 42
<212> DNA
<213> Artificial Sequence

<220>
<223> primer PRX1-PFX2'

<400> 11
tgggtcctta tacaccagat ccctggtgta gcagtagcca ga 42

<210> 12
<211> 39
<212> DNA
<213> Artificial Sequence

<220>
<223> primer SDK-PFX1

<400> 12
tcgaaggaga tagaatgaag acactccagt ttttcttcc 39

<210> 13
<211> 180
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> (1)..(180)
<223> X1UR product

<400> 13
atgaagacac tccagttttt cttccttttc tgttgctgga aagcaatctg ctgcaatagc 60

tgtgagctga ccaacatcac cattgcaata gagaaagaag aatgtcgttt ctgcataagc 120

atcaacacca cttggtgtgc tggctactgc tacaccaggg atctggtgta taaggaccca 180

<210> 14
<211> 704
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> (1)..(704)
<223> alpha-FSH (NM_000735) full length cDNA sequence

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gcagttactg agaactcata agacgaagct aaaatccctc ttcggatcca cagtcaaccg 60

ccctgaacac atcctgcaaa aagcccagag aaaggagcgc catggattac tacagaaaat 120

atgcagctat ctttctggtc acattgtcgg tgtttctgca tgttctccat tccgctcctg 180

atgtgcagga ttgcccagaa tgcacgctac aggaaaaccc attcttctcc cagccgggtg 240

ccccaatact tcagtgcatg ggctgctgct tctctagagc atatcccact ccactaaggt 300

ccaagaagac gatgttggtc caaaagaacg tcacctcaga gtccacttgc tgtgtagcta 360

aatcatataa cagggtcaca gtaatggggg gtttcaaagt ggagaaccac acggcgtgcc 420

actgcagtac ttgttattat cacaaatctt aaatgtttta ccaagtgctg tcttgatgac 480

tgctgatttt ctggaatgga aaattaagtt gtttagtgtt tatggctttg tgagataaaa 540

ctctcctttt ccttaccata ccactttgac acgcttcaag gatatactgc agctttactg 600

ccttcctcct tatcctacag tacaatcagc agtctagttc ttttcatttg gaatgaatac 660

agcattaagc ttgttccact gcaaataaag ccttttaaat catc 704

<210> 15
<211> 30
<212> DNA
<213> Artificial Sequence

<220>
<223> PCR primer HCG-SENT

<400> 15
atggattact acagaaaata tgcagctatc 30

<210> 16
<211> 30
<212> DNA
<213> Artificial Sequence

<220>
<223> PCR primer HCG-ANTISENT

<400> 16
ttaagatttg tgataataac aagtactgca 30

<210> 17
<211> 351
<212> DNA
<213> Artificial Sequence

<220>
<223> glycalA - RT-PCR product

<400> 17
atggattact acagaaaata tgcagctatc tttctggtca cattgtcggt gtttctgcat 60

gttctccatt ccgctcctga tgtgcaggat tgcccagaat gcacgctaca ggaaaaccca 120

ttcttctccc agccgggtgc cccaatactt cagtgcatgg gctgctgctt ctctagagca 180

tatcccactc cactaaggtc caagaagacg atgttggtcc aaaagaacgt cacctcagag 240

tccacttgct gtgtagctaa atcatataac agggtcacag taatgggggg tttcaaagtg 300

gagaaccaca cggcgtgcca ctgcagtact tgttattatc acaaatctta a 351

<210> 18
<211> 34
<212> DNA
<213> Artificial Sequence

<220>
<223> PCR primer HCG-SENTCACC

<400> 18
caccatggat tactacagaa aatatgcagc tatc 34

<210> 19
<211> 355
<212> DNA
<213> Artificial Sequence

<220>
<223> PCR product CACCglycalA

<400> 19
caccatggat tactacagaa aatatgcagc tatctttctg gtcacattgt cggtgtttct 60
gcatgttctc cattccgctc ctgatgtgca ggattgccca gaatgcacgc tacaggaaaa 120
cccattcttc tcccagccgg gtgccccaat acttcagtgc atgggctgct gcttctctag 180
agcatatccc actccactaa ggtccaagaa gacgatgttg gtccaaaaga acgtcacctc 240
agagtccact tgctgtgtag ctaaatcata taacagggtc acagtaatgg ggggtttcaa 300
agtggagaac cacacggcgt gccactgcag tacttgttat tatcacaaat cttaa 355

<210> 20
<211> 684
<212> DNA
<213> Artificial Sequence

<220>
<223> PCR product AB-FSH

<400> 20
atggattact acagaaaata tgcagctatc tttctggtca cattgtcggt gtttctgcat 60
gttctccatt ccgctcctga tgtgcaggat tgcccagaat gcacgctaca ggaaaaccca 120
ttcttctccc agccgggtgc cccaatactt cagtgcatgg gctgctgctt ctctagagca 180
tatcccactc cactaaggtc caagaagacg atgttggtcc aaaagaacgt cacctcagag 240
tccacttgct gtgtagctaa atcatataac agggtcacag taatgggggg tttcaaagtg 300
gagaaccaca cggcgtgcca ctgcagtact tgttattatc acaaatctaa tagctgtgag 360
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accacttggt gtgctggcta ctgctacacc agggatctgg tgtataagga cccagccagg 480
cccaaaatcc agaaaacatg taccttcaag gaactggtat atgaaacagt gagagtgccc 540
ggctgtgctc accatgcaga ttccttgtat acatacccag tggccaccca gtgtcactgt 600
ggcaagtgtg acagcgacag cactgattgt actgtgcgag gcctggggcc cagctactgc 660
tcctttggtg aaatgaaaga ataa 684

<210> 21
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> PCR forward primer PFMX2

<400> 21
aatagctgtg agctgaccaa 20

<210> 22
<211> 336
<212> DNA
<213> Artificial Sequence

<220>
<223> PCR product S-FSH-B

<400> 22
aatagctgtg agctgaccaa catcaccatt gcaatagaga aagaagaatg tcgtttctgc 60

ataagcatca acaccacttg gtgtgctggc tactgctaca ccagggatct ggtgtataag 120

gacccagcca ggcccaaaat ccagaaaaca tgtaccttca aggaactggt atatgaaaca 180

gtgagagtgc ccggctgtgc tcaccatgca gattccttgt atacataccc agtggccacc 240

cagtgtcact gtggcaagtg tgacagcgac agcactgatt gtactgtgcg aggcctgggg 300

cccagctact gctcctttgg tgaaatgaaa gaataa 336

<210> 23
<211> 31
<212> DNA
<213> Artificial Sequence

<220>
<223> PCR primer HCG-ANTISENT/woTAA

<400> 23
agatttgtga taataacaag tactgcagtg g 31

<210> 24
<211> 348
<212> DNA
<213> Artificial Sequence

<220>
<223> PCR product glycalwoTAA

<400> 24
atggattact acagaaaata tgcagctatc tttctggtca cattgtcggt gtttctgcat 60

gttctccatt ccgctcctga tgtgcaggat tgcccagaat gcacgctaca ggaaaaccca 120

ttcttctccc agccgggtgc cccaatactt cagtgcatgg gctgctgctt ctctagagca 180

tatcccactc cactaaggtc caagaagacg atgttggtcc aaaagaacgt cacctcagag 240

tccacttgct gtgtagctaa atcatataac agggtcacag taatgggggg tttcaaagtg 300

gagaaccaca cggcgtgcca ctgcagtact tgttattatc acaaatct 348

<210> 25
<211> 51
<212> DNA
<213> Artificial Sequence

<220>

<223> hybrid reverse primer ABLIGATION

<400> 25
ttggtcagct cacagctatt agatttgtga taataacaag tactgcagtg g 51

<210> 26
<211> 368
<212> DNA
<213> Artificial Sequence

<220>
<223> PCR product glycalwoTAAUR

<400> 26
atggattact acagaaaata tgcagctatc tttctggtca cattgtcggt gtttctgcat 60

gttctccatt ccgctcctga tgtgcaggat tgcccagaat gcacgctaca ggaaaaccca 120

ttcttctccc agccgggtgc cccaatactt cagtgcatgg gctgctgctt ctctagagca 180

tatcccactc cactaaggtc caagaagacg atgttggtcc aaaagaacgt cacctcagag 240

tccacttgct gtgtagctaa atcatataac agggtcacag taatgggggg tttcaaagtg 300

gagaaccaca cggcgtgcca ctgcagtact tgttattatc acaaatctaa tagctgtgag 360

ctgaccaa 368

<210> 27
<211> 227
<212> PRT
<213> Artificial Sequence

<220>
<223> synthetic peptide AB-FSH

<400> 27
Met Asp Tyr Tyr Arg Lys Tyr Ala Ala Ile Phe Leu Val Thr Leu Ser
1 5 10 15

Val Phe Leu His Val Leu His Ser Ala Pro Asp Val Gln Asp Cys Pro
20 25 30

Glu Cys Thr Leu Gln Glu Asn Pro Phe Phe Ser Gln Pro Gly Ala Pro
35 40 45

Ile Leu Gln Cys Met Gly Cys Cys Phe Ser Arg Ala Tyr Pro Thr Pro
50 55 60

Leu Arg Ser Lys Lys Thr Met Leu Val Gln Lys Asn Val Thr Ser Glu
65 70 75 80

Ser Thr Cys Cys Val Ala Lys Ser Tyr Asn Arg Val Thr Val Met Gly
85 90 95

Gly Phe Lys Val Glu Asn His Thr Ala Cys His Cys Ser Thr Cys Tyr
100 105 110

Tyr His Lys Ser Asn Ser Cys Glu Leu Thr Asn Ile Thr Ile Ala Ile
115 120 125

Glu Lys Glu Glu Cys Arg Phe Cys Ile Ser Ile Asn Thr Thr Trp Cys
130 135 140

Ala Gly Tyr Cys Tyr Thr Arg Asp Leu Val Tyr Lys Asp Pro Ala Arg
145 150 155 160

Pro Lys Ile Gln Lys Thr Cys Thr Phe Lys Glu Leu Val Tyr Glu Thr
165 170 175

Val Arg Val Pro Gly Cys Ala His His Ala Asp Ser Leu Tyr Thr Tyr
180 185 190

Pro Val Ala Thr Gln Cys His Cys Gly Lys Cys Asp Ser Asp Ser Thr
195 200 205

Asp Cys Thr Val Arg Gly Leu Gly Pro Ser Tyr Cys Ser Phe Gly Glu
210 215 220

Met Lys Glu
225

<210> 28
<211> 561
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> (1)..(561)
<223> cDNA sequence of INF-beta without stop codon

<400> 28
atgaccaaca agtgtctcct ccaaattgct ctcctgttgt gcttctccac tacagctctt 60

tccatgagct acaacttgct tggattccta caaagaagca gcaattttca gtgtcagaag 120

ctcctgtggc aattgaatgg gaggcttgaa tactgcctca aggacaggat gaactttgac 180

atccctgagg agattaagca gctgcagcag ttccagaagg aggacgccgc attgaccatc 240

tatgagatgc tccagaacat ctttgctatt ttcagacaag attcatctag cactggctgg 300

aatgagacta ttgttgagaa cctcctggct aatgtctatc atcagataaa ccatctgaag 360

acagtcctgg aagaaaaact ggagaaagaa gatttcacca ggggaaaact catgagcagt 420

ctgcacctga aaagatatta tgggaggatt ctgcattacc tgaaggccaa ggagtacagt 480

cactgtgcct ggaccatagt cagagtggaa atcctaagga acttttactt cattaacaga 540

cttacaggtt acctccgaaa c 561

<210> 29
<211> 513
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> (1)..(513)
<223> INF-alpha-2B sequence with enterokinase site

<400> 29
gacgacgacg acaagtgtga tctgcctcaa acccacagcc tgggtagcag gaggaccttg 60

atgctcctgg cacagatgag gagaatctct cttttctcct gcttgaagga cagacatgac 120

tttggatttc cccaggagga gtttggcaac cagttccaaa aggctgaaac catccctgtc 180

ctccatgaga tgatccagca gatcttcaat ctcttcagca caaaggactc atctgctgct 240

tgggatgaga ccctcctaga caaattctac actgaactct accagcagct gaatgacctg 300

gaagcctgtg tgatacaggg ggtgggggtg acagagactc ccctgatgaa ggaggactcc 360

attctggctg tgaggaaata cttccaaaga atcactctct atctgaaaga gaagaaatac 420

agcccttgtg cctgggaggt tgtcagagca gaaatcatga gatctttttc tttgtcaaca 480

aacttgcaag aaagtttaag aagtaaggaa tga 513

<210> 30
<211> 1074
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> (1)..(1074)
<223> INF-beta/INF-alpha-2B sequence with enterokinase site

<400> 30
atgaccaaca agtgtctcct ccaaattgct ctcctgttgt gcttctccac tacagctctt 60

tccatgagct acaacttgct tggattccta caaagaagca gcaattttca gtgtcagaag 120

ctcctgtggc aattgaatgg gaggcttgaa tactgcctca aggacaggat gaactttgac 180

atccctgagg agattaagca gctgcagcag ttccagaagg aggacgccgc attgaccatc 240

tatgagatgc tccagaacat ctttgctatt ttcagacaag attcatctag cactggctgg 300

aatgagacta ttgttgagaa cctcctggct aatgtctatc atcagataaa ccatctgaag 360

acagtcctgg aagaaaaact ggagaaagaa gatttcacca ggggaaaact catgagcagt 420

ctgcacctga aaagatatta tgggaggatt ctgcattacc tgaaggccaa ggagtacagt 480

cactgtgcct ggaccatagt cagagtggaa atcctaagga acttttactt cattaacaga 540

cttacaggtt acctccgaaa cgacgacgac gacaagtgtg atctgcctca aacccacagc 600

ctgggtagca ggaggacctt gatgctcctg gcacagatga ggagaatctc tcttttctcc 660

tgcttgaagg acagacatga ctttggattt ccccaggagg agtttggcaa ccagttccaa 720

aaggctgaaa ccatccctgt cctccatgag atgatccagc agatcttcaa tctcttcagc 780

acaaaggact catctgctgc ttgggatgag accctcctag acaaattcta cactgaactc 840

taccagcagc tgaatgacct ggaagcctgt gtgatacagg gggtgggggt gacagagact 900

cccctgatga aggaggactc cattctggct gtgaggaaat acttccaaag aatcactctc 960

tatctgaaag agaagaaata cagcccttgt gcctgggagg ttgtcagagc agaaatcatg 1020

agatcttttt ctttgtcaac aaacttgcaa gaaagtttaa gaagtaagga atga 1074

<210> 31
<211> 1059
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> (1)..(1059)
<223> INF-beta/INF-alpha-2B sequence without enterokinase site

<400> 31

atgaccaaca agtgtctcct ccaaattgct ctcctgttgt gcttctccac tacagctctt 60

tccatgagct acaacttgct tggattccta caaagaagca gcaattttca gtgtcagaag 120

ctcctgtggc aattgaatgg gaggcttgaa tactgcctca aggacaggat gaactttgac 180

atccctgagg agattaagca gctgcagcag ttccagaagg aggacgccgc attgaccatc 240

tatgagatgc tccagaacat ctttgctatt ttcagacaag attcatctag cactggctgg 300

aatgagacta ttgttgagaa cctcctggct aatgtctatc atcagataaa ccatctgaag 360

acagtcctgg aagaaaaact ggagaaagaa gatttcacca ggggaaaact catgagcagt 420

ctgcacctga aaagatatta tgggaggatt ctgcattacc tgaaggccaa ggagtacagt 480

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